Amendments to the Specification

Please replace the paragraph beginning at page 16, line 15, with the following rewritten paragraph:

Early traffic regulator module ~~232~~ 228 is used to send early traffic regulation (ETR) signals, e.g., messages, to upstream nodes to trigger the congestion control and forced packet flow reductions techniques of the present invention to be implemented in the upstream node. In the case of a node receiving an ETR message, the ETR module 228 is responsible for responding to the ETR message by implementing forced packet flow rate reductions. In some embodiments the forced packet flow rate reductions in response to an ETR message are on flows directed to the node which was the source of the ETR message while in other embodiments, the forced packet flow rate reductions are limited to flows destined for target IP address(es) identified in the received ETR message.

Please replace the paragraph beginning at page 27, line 16, with the following rewritten paragraph:

Processing of non-responsive flows proceeds from step 512 to step 520 wherein the non-responsive flows are blocked. The processing of the received packets corresponding to a non-responsive flow then stops in step ~~528~~ 530.

Please replace the paragraph beginning at page 28, line 27, with the following rewritten paragraph:

In step ~~526~~ 518, the packet forwarding rates of each aggressive flow is regulated separately as a function of the flow's determined current flow rate and the corresponding baseline flow rate. Forced reduction in a flow's forwarding rate is implemented by adjusting the maximum threshold 802 of the queue 800 of a flow or flow group as shown in Figure 8. The forced flow forwarding rate reduction is achieved, in

one embodiment of the invention, by dropping the required number of received packets from the aggressive flows packet forwarding queue. The drop rate, e.g., penalization severity, for each aggressive flow is affected by the packet arrival rate of the flow. The higher the packet arrival rate of the flow above the baseline flow rate, the higher the applied packet drop rate will be.

Please replace the paragraph beginning at page 29, line 14, with the following rewritten paragraph:

Fig. 8 illustrates a flow rate reduction technique which can be applied in step 518 to allowable aggressive flows in accordance with the invention to control packet drop rates as applied to a packet queue 800. As discussed above the packets corresponding to individual aggressive flows are stored in different packet queues. In Fig. 8 an exemplary flow rate reduction technique uses two different thresholds, which are queue fullness thresholds to control packet drop rates, a min threshold 804 and max threshold ~~806~~ 802.

Please replace the paragraph beginning at page 31, line 24, with the following rewritten paragraph:

Fig. 7 illustrates the exemplary results of applying the flow control methods of the invention to the nine flows illustrated in Fig. 6. The second from last row of Fig. ~~9~~ 7 shows the flow throughputs for each of the nine flows after AFFC processing. Notice that if the congestion still continues, the AFFC flow regulation will continue with the penalty ratio k on flow forwarding rates-- $\lambda(t) = \frac{\lambda(t - \Delta t)}{k}$.

Please replace the paragraph beginning at page 34, line 11, with the following rewritten paragraph:

Flow F7 is found to be best effort traffic having an arrival rate (500 bits/s) which is higher than the baseline flow rate (200 bits/s) for class 3 traffic. Accordingly, forced flow rate reduction, e.g., dropping of packets, is applied to flow F7 to reduce its flow rate to the baseline flow rate of ~~2000~~ 200 bits/s.

Please replace the paragraph beginning at page 37, line 14, with the following rewritten paragraph:

The path information obtained from the destination node 110 is used by the bottleneck node 127 in step 912. In step 912, the bottleneck node ~~110~~ 127 sends an ETR signal, e.g., control message, to the upstream node 120 using the supplied path information. The ETR control message indicates whether flow control is to be applied (started) or discontinued (stopped) and includes information such as victims', e.g., targeted destination device IP address(es).

Please replace the paragraph beginning at page 39, line 22, with the following rewritten paragraph:

In the destination node 110, two ETR subroutines are used for messaging. These are: (1) the Bt-R subroutine 1040, and (2) the Rt-S subroutine ~~1034~~ 1032. The Bt-R subroutine 1040 receives back tracing messages 1112 from upstream nodes requesting back tracing path reconstructed. In response to back tracking request messages 1112, the BT-R subroutine 1040 reconstructs back tracing path The Bt-R subroutine 1040, also receives back tracing path messages 1110 sent from network node 127 with certain probability (e.g. 1/20,000, which corresponds to one path being determined for every 20,000 packets of a given flow that are received).

Please replace the paragraph beginning at page 41, line 11, with the following rewritten paragraph:

The relationship between RTT 1205, back tracing path messages and the estimated round trip time period RTT0 1207 can be seen in Figure 12 for an exemplary communications path having a source 1202 and destination device 1214. In Fig. 12, the exemplary network node path-chain comprises, in addition to source and destination nodes 1202, ~~1212~~ 1214, respectively, nodes 1204, 1206, 1208, 1210 and 1212.